

ABSTRACT

An optoelectronic device such as a vertical cavity surface emitting laser (VCSEL) includes a tunnel junction that conducts a current of holes tunneling into an active region. Tunneling in a selected area of the tunnel junction is disabled to form a current blocking region that confines the current to desired regions. Tunneling can be disabled in the selected area using techniques including but not limited to implanting or diffusing dopants, disrupting crystal structure, or etching to remove part of the tunnel junction.

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